BIOTIC COMMUNITY

Fish Community

The most recent fish community data were collected by seine between late July and late September in 1990, 1992, 1993 and 1994. Sample sites were chosen on most fourth-order and larger streams, and on some streams of smaller order. Site selection was based upon access, and was generally conducted upstream or downstream of bridge crossings (Figures 1-4).

We identified 51 species of fish (and several hybrids) in the most recent basin surveys (Table 8). Minnows species such as bigmouth shiners, sand shiners, and red shiners that are tolerant of shallow, sediment-filled channels occurred at over 80% of all sample sites. Other cyprinids occurring at over half of the sites seined were central stoneroller, bluntnose minnow, fathead minnow, and creek chub. Sunfishes were surprisingly prevalent; green sunfish, bluegill, and largemouth bass occurred at 68%, 50%, and 46% of all sample sites, respectively.

Four species collected historically but absent in recent samples were ghost shiner (Notropis buchanani) – last collected from the Chariton River in 1941; plains minnow (Hybognathus placitus) – last collected in 1941 from the Chariton River and Spring Creek; western silvery minnow (Hybognathus argyritis) – last collected from the Chariton River in 1967; and black buffalo (Ictiobus niger) – last collected from the Chariton River in 1966 (W. Pflieger, unpublished data).

Three species collected historically but represented by only one or two individuals in recent samples were Topeka shiner (Notropis topeka), trout-perch (Percopsis omiscomaycus) and stonecat (Noturus flavus). One specimen of Topeka shiner and one hybrid (N. topeka X dorsalis) were collected from Dog Branch Creek in eastern Putnam County (site 27, Figure 2) (R. Haydon, pers. comm.). The only recent records of trout-perch were individual fish captured in Blackbird Creek in Putnam County (1990) and in Mussel Fork Creek on the conservation area (1987). Only two specimens of stonecat were collected in the basin, both on the unchannelized portion of the Chariton River in 1994. We did not find any stonecat in Mussel Fork Creek where they were commonly found in the 1960s, nor in Shoal Creek where they were abundant in the late 1970s (W. Pflieger, unpublished data). Fish species collected throughout the basin, yet considered indicators of good habitat, include the blackside darter (Percina maculata) and brassy minnow (Hybognathus hankinsoni).

Several species have not been documented in the Chariton River basin until recently. Most noteworthy was the capture of a bullhead minnow (<u>Pimephales vigilax</u>) in 1994 from the Chariton River, thus extending the known range of this species (S. Bruenderman, pers. comm.). Other relatively recent records for the basin include largemouth bass (<u>Micropterus salmoides</u>) and bluegill (<u>Lepomis macrochirus</u>), which were first sampled in the mid sixties (W. Pflieger, unpublished data). Their steady increase in occurrence is likely due to emigration of juvenile sunfishes from an ever-increasing number of small impoundments in the watershed. Another recent stream invader, the mosquitofish (<u>Gambusia affinis</u>), was collected in samples of

tributaries to Thomas Hill Reservoir in 1992 (D. Weirich, unpublished data) and in several other streams in the southern reaches of the basin in 1994. To date, mosquitofish have not been collected north of Macon and Chariton counties. In East Fork of Little Chariton River, bighead carp (Hypophthalmichthys nobilis) have been captured during stilling basin inspections below Long Branch Lake. The first specimen captured in 1987 was 27 inches long. In 1994, bighead carp comprised nearly half of all fish captured below Long Branch Dam. Total length ranged between 12 and 18 inches. In 1996, dozens of bighead carp of all sizes were observed far upstream in the North Blackbird Creek tailwater area of privately owned Lake Thunderhead in Putnam County (M. Anderson, pers. comm.).

Large fishes are under-represented in all recent samples due to seine selectivity. Yet, when electrofishing and hoopnetting surveys have been conducted, very few adult specimens of these species have been collected. Top predators such as the flathead catfish have been scarce in all samples. Some large flathead catfish and channel catfish are reported by anglers whenever flows are high.

Intentional Introductions

Spotted bass were introduced into Mussel Fork Creek by Otto Fajen of the Department of Conservation in 1968. An electrofishing survey in 1987 in Mussel Fork Conservation Area and several miles upstream near Hart, Missouri produced 17 spotted bass, ranging in size from 15-inch adults to young-of-the-year. Adults seemed oriented to submersed root wads.

Fish Contamination Levels and Health Advisories

There is no specific cause for concern regarding contamination of fish in the Chariton River watershed (Missouri Department of Conservation, unpublished data). Statewide chlordane advisories have been lifted due to steadily decreasing concentrations of this banned insecticide in fish flesh. In 2001, statewide concerns developed regarding the potential for accumulation of mercury in the flesh of fish-eating predators such as largemouth bass. The only significant piscivore harvested by anglers in the Chariton River watershed is the flathead catfish, which have not yet been examined for mercury levels.

Aquatic Invertebrate Community

Suitable mussel habitat is generally lacking throughout the basin. As of 2001, the only qualitative survey to assess the mussel fauna was conducted on Mussel Fork Creek in Chariton County in 1994. The most common species collected were *Quadrula quadrula* (mapleleaf), *Lasmigona complanata* (white heelsplitter) and *Leptodea fragilis* (fragile papershell). Less common species included *Amblema plicata* (threeridge), *Lampsilis teres* (yellow sandshell), *Pyganodon* = (*Anodonta*) *grandis* (giant floater), *Potamilus ohioensis* (pink papershell), *Truncilla truncata* (deer-toe, only one specimen), *Utterbackia* (=*Anodonta*) *imbecillis* (paper pondshell, shell only) and *Ligumia subrostrata* (pond mussel, shell only) (D. Figg and B. Sietman, unpublished data).

Table 8. List of fish species captured by seine by the Missouri Department of Conservation at 80 sample sites in the Chariton River basin (between 1987 and 1994). Asterisks (*) denote species not collected in recent samples but previously documented as occurring in the watershed (year of last collection in parentheses). Frequency of occurrence was calculated as the proportion of all samples in which a species appeared.

| LARGE FISH | FREQUENCY (%) |
|---|---------------|
| Gizzard shad (<u>Dorosoma cepedianum</u>) | 10 |
| Goldeneye (<u>Hiodon alosoides</u>) | 4 |
| Common carp (Cyprinus carpio) | 19 |
| Bighead carp (<u>Hypophthalmichthys</u> <u>nobilis</u>) | 1 |
| River carpsucker (<u>Carpiodes carpio</u>) | 29 |
| Quillback (Carpiodes cyprinus) | 26 |
| White sucker (<u>Catostomus</u> <u>commersoni</u>) | 20 |
| Smallmouth buffalo (<u>Ictiobus</u> <u>bubalus</u>) | 4 |
| Bigmouth buffalo (<u>Ictobius cyprinellus</u>) | 4 |
| Black buffalo (<u>Ictiobus</u> <u>niger</u>) | * (1966) |
| Shorthead redhorse (<u>Moxostoma macrolepidotum</u>) | 5 |
| Blue catfish (<u>Ictalurus furcatus</u>) | 1 |
| Black bullhead (<u>Ictalurus melas</u>) | 20 |
| Yellow bullhead (<u>Ictalurus natalis</u>) | 14 |
| Channel catfish (<u>Ictalurus punctatus</u>) | 38 |
| Flathead catfish (<u>Pylodictus</u> <u>olivaris</u>) | 10 |
| White bass (Morone chrysops) | 2 |
| Green sunfish (<u>Lepomis cyanellus</u>) | 68 |
| Orangespotted sunfish (<u>Lepomis humilis</u>) | 64 |
| Bluegill (<u>Lepomis</u> macrochirus) | 50 |
| Bluegill X green sunfish hybrid | 3 |
| Spotted bass (Micropterus punctatus) | 1 |
| Largemouth bass (Micropterus salmoides) | 46 |

Table 8 continued

| White crappie (Pomoxis annularis) | 14 |
|---|---------------|
| Black crappie (<u>Poxomis</u> <u>nigromaculatus</u>) | 4 |
| Sauger (<u>Stizostedion</u> canadense) | 1 |
| Walleye (<u>Stizostedion</u> <u>vitreum</u>) | 1 |
| Freshwater drum (<u>Aplodinotus</u> grunniens) | 8 |
| NEKTONIC FISHES | FREQUENCY (%) |
| Central stoneroller (<u>Campostoma anomalum</u>) | 63 |
| Western silvery minnow (<u>Hybognathus argyritis</u>) | * (1967) |
| Brassy minnow (<u>Hybognathus hankinsoni</u>) | 35 |
| Plains minnow (<u>Hybognathus placitus</u>) | * (1941) |
| Golden shiner (Notemigonus crysoleucas) | 15 |
| Emerald shiner (Notropis atherinoides) | 5 |
| Ghost shiner (Notropis buchanani) | * (1941) |
| Bigmouth shiner (Notropis dorsalis) | 80 |
| Sand shiner (Notropis stramineus) | 83 |
| Topeka shiner (Notropis topeka) | 1 |
| Red shiner (<u>Cyprinella lutrensis</u>) | 83 |
| Redfin shiner (<u>Lythrurus umbratilis</u>) | 13 |
| Common shiner (<u>Luxilus cornutus</u>) | 29 |
| Bluntnose minnow (<u>Pimephales</u> <u>notatus</u>) | 68 |
| Fathead minnow (<u>Pimephales promelas</u>) | 58 |
| Bullhead minnow (<u>Pimephales</u> <u>vigilax</u>) | 1 |
| Creek chub (Semotilus atromaculatus) | 79 |
| Trout-perch (Percopsis omiscomaycus) | 3 |
| Mosquitofish (<u>Gambusia</u> <u>affinis</u>) | 9 |
| BENTHIC FISHES | |
| Speckled chub (<u>Hybopsis</u> <u>aestivalis</u>) | 4 |
| Silver chub (<u>Hybopsis</u> <u>storieana</u>) | 4 |

Table 8 continued

| Suckermouth minnow (Phenacobius mirabilis) | 38 |
|---|----------|
| Stonecat (Noturus flavus) | 1 |
| Tadpole madtom (<u>Noturus gyrinus</u>) | * (1979) |
| Johnny darter (<u>Etheostoma</u> <u>nigrum</u>) | 39 |
| Blackside darter (Percina maculata) | 18 |